

ORD/NSNFP Quarterly Meeting  
April 24<sup>th</sup>, 2003  
Gaithersburg, MD

To: Distribution

From: Phil Wheatley / Mark Arenaz

Subject: ORD/NSNFP Quarterly Meeting Minutes

**1. Opening Comments (Joe Price, ORD / Mark Arenaz, NSNFP)**

Joe and Mark welcomed everyone to the meeting. Mark said that the NSNFP and the ORD have been working well together and he appreciates the support that has been provided by both groups.

**2. Prior Action Items (Phil Wheatley, NSNFP)**

Phil went over the previous Quarterly Meeting action items and all had been completed except for the following. The status and revised actions are included.

1. BSC (Guy Martin) provide the date and what will be needed from the NSNFP to support the AMR updates. Due Date = 1/10/03

Status: The NSNFP sent a letter to BSC requesting that they support the update of three AMRs which were (1) Initial Radionuclide Inventory Analysis, (2) DOE SNF Waste Form Abstraction and (3) Colloid Source Term. BSC now feels that they might not need the support of the NSNFP on two of these AMRs. Joe Price will check into this. Due Date = 5/15/03

2. ORD (Joe Price) contact Mark Van Der Puy on what should be included in the LSN and provide this information to the NSNFP. Due Date = 3/31/03 (prior to the next Quarterly meeting)

Status: This is still being worked by Joe. Revised Due Date = 5/30/03

**3. NSNFP Planning for FY 04 (Phil Wheatley, NSNFP)**

The NSNFP has completed planning for the FY 04 budget at three levels of funding which are \$9.8M, \$7.2M and \$5.0M. The \$9.8M budget covers such work as:

- Continued activities important for the LA
- Remote welding continued development
- Analysis of MCO transportability
- SNF site QA surveillance
- Stakeholder interaction
- 24" DOE standardized canister and MCO survivability analyses

If the \$7.2M budget is provided, the following work would have to be eliminated:

- Remote welding development
- Analysis of MCO transportability
- SNF site QA surveillance
- Stakeholder interaction

If the \$5.0M budget is provided, only work activities important to the LA would be completed and details will be provided if this budget scenario becomes real. There is a risk at this budget level that not all DOE SNF analysis work will be performed so that the maximum amount of DOE SNF could be sent to the repository. BSC stated that the 24" DOE standardized canister drop work should be pushed at this budget level since it is important to the preclosure safety case.

It was said that the work that the NSNFP has completed on the 18" SNF DOE standardized canister and what is planned for the 24" canister and MCO could be similar to the work that is being done to evaluate the drop of the waste package. Therefore, the NSNFP and BSC should work together on this issue for the benefit of both groups.

#### **Action Item**

3. NSNFP (Tom Hill) get with Dennis Richardson and Mike Anderson to see if the drop analyses work on the DOE SNF canisters and the Yucca Mountain Project waste package could be worked together for the benefit of both groups.  
Due Date = 5/21/03

#### **4. Status of Criticality-Related Design Objectives & Analyses (Guy Martin, BSC)**

The criticality analysis for DOE SNF in the surface facility (preclosure) assumes moderator exclusion. For the postclosure case, no burn-up credit is being taken for DOE SNF. As a point of interest, it was said that burn-up credit is being taken for commercial SNF in the postclosure case and the NRC may only allow 50 percent of the burn-up. Six criticality-related reports are scheduled for near-term completion. Three deal with commercial PWR SNF and the other three are (1) Analysis of Mechanisms for Early Waste Package/Drip Shield Failure, (2) Revision 2 of the Criticality Topical Report and (3) Criticality Features, Events and Process Screening Analysis (postclosure).

#### **5. TSPA-LA (Jim Duguid, BSC)**

The TSPA-LA will use a DOE surrogate uranium metal fuel. Sensitivity analyses for DOE SNF Groups 2 through 11 will be conducted to justify the use of the surrogate and the results will be documented in the TSPA-LA report. The TSPA-LA model is projected to be validated in October 2003. Waste package failures are included in the models but the total number of waste packages being used is the same as was used for the Site Recommendation (SR). A preliminary look at the waste package failure issue shows a higher dose from DOE SNF than commercial SNF since commercial SNF is given cladding credit but the dose is still way below the limits. The DOE SNF dissolution model also assumes instantaneous dissolution of the DOE SNF. Colloid transport is also

being evaluated but only a small fraction of the irreversibly sorbed radionuclides on colloids will be transported through the unsaturated and saturated zones.

The number of waste packages would change if you go beyond the 7,000 MTHM DOE SNF and HLW case. Or the number of waste packages could change if DOE-EM sent more SNF to the repository than the currently planned one-third of the DOE allocation. This was discussed because it came up in the NSNFP Strategy Meeting which was held on the previous two days. Sending a higher ratio of DOE SNF could increase the cost as some waste packages might contain SNF and no HLW. It was thought that sending a higher ratio of DOE SNF would not affect the dose significantly but sensitivity model runs should be done to verify this. Scoping analyses could be run on some of these different ratio cases using the SR model.

In the area of disruptive events, the eruptive volcanic event has been modified. Previously it dealt only with commercial SNF waste packages but now it includes the destruction of DOE SNF and HLW waste packages.

The issue of DOE SNF technical information versus data came up again and was discussed briefly. The Yucca Mountain Project has a DR (deficiency report) on this topic that needs to be resolved.

It was asked in the meeting what is planned for the americium and curium now stored at SRS. It was said that it will be mixed with the HLW.

#### **Action Items**

4. ORD (Joe Price) work with the waste form group and look at the issue of DOE SNF technical information versus data. Due Date = 5/21/03

5. NSNFP (Henry Loo) work with Joe Price on the number of DOE SNF waste packages that would go to the repository. Due Date = 8/1/03

6. OSPD (Markus Popa) work with Jim Duguid to determine what would be involved in running scoping analyses to evaluate a different ratio of DOE SNF and HLW case and also determine which case(s) might be run to address Christine Gelles' discussion. Due Date = 5/31/03 (*RW reviewed this potential work on May 7<sup>th</sup> and will be soon be discussing it with BSC.*)

#### **6. Preclosure Safety Analysis (PSA) Support Activities (Dennis Richardson, BSC)**

A list of work that is being done in the PSA area for DOE SNF was provided. Some of the work is behind schedule as qualifying the computer code has been a holdup. Staff shortages have also caused delays. A recovery plan with details will be provided. The work needs to be completed by the end of FY 03 but the plan should be realistic and achievable. The preclosure moderator exclusion case has been presented to the NRC. The new source term information recently provided by the NSNFP will be used in the

analyses. The NSNFP will perform screening dose analyses for all DOE SNF using the new source terms and BSC will check the results.

The canister release criteria places limits on radionuclides release in the event of a canister breach. The criteria will be reviewed by the NSNFP before being included in the WASRD. The current criteria are rem-based but there is a FY 03 effort to convert the criteria to curie-based. It was said by the NSNFP that the curie-based conversion may not be needed if the non-breached canister case is accepted. Dennis said the conversion is being done as a backup defense and allows you to go down the canister path (no-breach) or the curie limit path.

7. BSC (Guy Martin) work to get the PSA work recovery plan to the NSNFP and ORD. Due Date = 5/9/03

8. NSNFP/ORD (Henry Loo / Joe Price) check with Marcus Popa and Guy Martin on how the canister release criteria would be included in the WASRD. Due Date = 5/30/03 *(A teleconference was held on the curie-based conversion between the NSNFP and the Yucca Mountain Project on April 30<sup>th</sup>. Markus Popa/BSC/ORD agreed that the work to define the maximum curie content of the DOE SNF canister should continue. The WASRD would not be modified to include this new information but rather an approach comparable to what the navy program took would be adopted in the WASRD. Action Item completed = 4/30/03)*

#### **7. Waste Form Baseline for LA (Guy Martin, BSC)**

The December 2004 LA will address canistered DOE SNF, bare DOE-owned intact commercial SNF and DOE borosilicate HLW in canisters. The licensability of new waste forms will be evaluated using the NRC's 10 CFR 63.44 process. It was asked if the LA could accommodate a change in the ratio of SNF versus HLW which is now set as 1/3 SNF and 2/3 HLW of the 7,000 MTHM allocation (*see Item #5 above*). It was said that this would first have to be evaluated. It was suggested by the NSNFP that the LA might be written without a focus on the 1/3 ratio of SNF if the technical information could support this. The ORD replied that changes like this might have to be addressed in a LA amendment.

#### **8. Status of Calcine HLW Activities (Joe Pruitt, INEEL)**

The Yucca Mountain Project EIS listed the INEEL HLW canister count at 1190. This was because it had previously been planned to run the calcine through a separation process and send only the highest level waste to the repository in a glass waste form. Since the INEEL is now considering the shipment of untreated calcine to the repository (no separation or vitrification), the canister count would be between 4,000 to 5,000. If the calcine were to be sent as a vitrified glass waste form, the canister count would go up to between 16,000 and 17,000 canisters. The State of Idaho prefers the direct vitrification alternative. The INEEL has estimated that the elimination of a vitrification facility makes possible a life cycle cost savings on the order of \$6 billion.

An accelerated schedule for disposal of the calcine would be to complete characterization of the calcine by 2007, obtain repository waste form acceptance criteria by 2012, complete construction of needed facilities by 2020 and ship all calcine to the repository by 2035. The highest project risk to the calcine effort is dual EPA-NRC regulations, which must be dealt with. Retrieval of the calcine and characterization is also a technical challenge. The RCRA issue is currently being worked by EM and GC with EPA Region 10. Alternate treatment studies for the calcine, including other than vitrification, are also being conducted by the INEEL.

#### **9. DOE SNF NRC Technical Exchange (Guy Martin, BSC)**

The March 5<sup>th</sup> and 6<sup>th</sup> meeting with the NRC on the licensing strategy for DOE SNF went well. Support by the NSNFP to the Yucca Mountain Project on other meetings with the NRC, such as criticality, could be beneficial. The NSNFP could help with the agenda and dry runs and provide a representative to attend the meeting. DOE-EM management will be kept informed of when such support might be needed. The 12 action items from the March 5<sup>th</sup> and 6<sup>th</sup> meeting were reviewed and they were mostly requests by the NRC for additional information. These actions are being tracked by Guy Martin (BSC) and the list of action items will be provided to Joe Price (ORD).

#### **10. EM Site Compliance Plans (Bill Hurt, NSNFP)**

EM site compliance plans were discussed. They are intended to demonstrate compliance with each requirement in the CRWMS acceptance criteria for a specific EM site. The Navy, for example, has already produced one for their shipping site and SNF. After some discussion, the following questions were presented by Bill:

- In light of the baseline, canisterized DOE SNF, and the licensing strategy, canister breach is beyond Category 2, do we need a site specific compliance plan?
- Is the NSNFP draft qualification plan for the DOE standard canister (includes both 18/24 inch standardized canister and MCOs) all that is needed?
- If the NSNFP were to generate a generic storage/shipping record form, do the sites need to do anything else?
- Based on NSNFP and BSC effort to make WAC performance based, do we need to update the guidance document?

The discussion was concluded by saying that the NSNFP needs to discuss these issues with the various EM sites to determine what might be done.

#### **11. Status of the Neutron Absorber Development (Bill Hurt, NSNFP)**

Some types of DOE SNF contain highly enriched uranium and may require criticality control during the regulatory period. Gadolinium within the DOE SNF canister basket is being developed since it has a high thermal neutron absorption cross section. It has been determined that Ni-Cr-Mo-Gd alloys are formable and weldable (no cracking) and their mechanical properties will meet ASME requirements. Longer-term immersion corrosion tests results show low corrosion rates in J-13 water. Neutronic performance of prototype alloys is exceptional and consistent with published data and is more effective than boron.

The results from the development will be published in about July 2003. The ASTM material specification is expected in FY 03 and the ASME code changes are expected in FY 04. A full-scale demonstration is scheduled for FY 04. Informal meetings with the NRC may help avoid questions and the NSNFP will be working with the Yucca Mountain Project on this. It was asked how the gadolinium compares to other materials and it was said that you can't weld boron metals and cadmium metals do not last very long when exposed to water. It was also asked when the gadolinium might be needed. It was said that some DOE SNF may need it for shipments and preclosure but most of the need is during the postclosure period.

**12. Future NSNFP Organization and Interface (Mark Arenaz, NSNFP)**

The movement of the NSNFP from EM to RW had previously been discussed and it is still being considered for FY 05. The results of the various EM Corporate Project Teams and possible EM reorganization are still pending. The NSNFP will continue to move forward on its current path until redirected. It was said that the Office of Legacy Management, which is being considered by EM, will have the task to monitor closed EM sites.

**13. Action Items (Phil Wheatley / Jim Linhart, NSNFP)**

The action items were reviewed and they are included in these minutes.

**14. Closing (Mark Arenaz, NSNFP / Joe Price, ORD)**

Mark and Joe thanked everyone for their support of the meeting.

**19. Next Quarterly Meeting (Mark Arenaz, NSNFP / Joe Price, ORD)**

The next NSNFP Strategy Meeting is being considered for August 2003. The actual date and location of the meeting will be provided after the options have been further evaluated.

**Concurrences:**

by email

**Joe Price, ORD**

by email

**Mark Arenaz, NSNFP**

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